A New Dietary Regimen for Arthritis

Value of Cod Liver Oil on a Fasting Stomach

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IN a series of 98 arthritic or rheumatic patients who were treated for six months on a special dietary regimen restricting water intake and including administration of cod liver oil on a fasting stomach, 92 (93 per cent) showed major clinical improvement and 89 (90 per cent) favorable changes in blood chemistry. The results suggest that adherence to the prescribed regimen on a long-term basis may result in sustained clinical improvement.

The blood sedimentation rates dropped consistently from averages of 20 to 30 (Wintrobe) to normals of 0 to 12 within a period of eight to 18 weeks. These findings provide an objective indication of reduced severity of the arthritic inflammatory process.

Since arthritis is one of the diseases in which intravascular agglutination is consistently found, a comparative study was made of this reaction in relation to blood sludging as a possible etiological factor.

DESIGN OF STUDY

One hundred and forty unselected cases of arthritis coming through the clinic were started on our modified dietary regimen. Osteoarthritis, rheumatoid arthritis, and mixed types predominated and included cases in all the stages defined in the therapeutic criteria of the American Rheumatism Association.

The therapeutic criteria were designed specifically for rheumatoid arthritis classification. Since this report included osteoarthritis, gout and mixed types of arthritis, the term "moderately severe" (known as Class 2) hereafter will include all cases studied.

Ideally, of course, a therapeutic trial should be carried out on minutely characterized subjects. But in the past some other investigators have lumped all types of arthritics in their program evaluations. We pursued this course to establish preliminary leads that might substantiate our belief that most arthritic problems have their basis, to a large degree, in diet and the equally important eating habits.

The authors feel that both degenerative and proliferative arthritis can be resolved through a dietary regimen, despite the general belief that the various types of arthritis under clinical investigation must be considered separately. One important factor to be considered in lumping rheumatoid arthritis, osteoarthritis and gouty arthritis in a single clinical study is this: All have a common denominator in blood sludging.[1]

For purposes of comparison, x-ray studies were made in about 40 per cent of the cases. There was a preponderance of Class II, moderately severe type.

Forty-two patients left the study group because of the distance to the clinic for the necessary frequent visits or were dropped for non-attendance or lack of dietary cooperation. Thus, the study involves a total of 98 patients followed over a period of approximately six months on an outpatient basis. Each patient served as his own control, since pre-study diet and observation provided the basis of comparison for appraising the effects of the dietary regimen during the study.

About 58 per cent of the group had been receiving either liver-iron supplements or physiotherapy without significant improvement prior to the study. They continued their previous therapeutic program while following the prescribed dietary regimen.

Some 25 per cent of the study group had at some time in the past been treated with steroid hormones, gold salts, paraffin wax baths, and aspirin without success.

No subjects were using steroid hormones, gold salts or paraffin wax baths during the study. Those

taking aspirin prior to the study were allowed to continue, providing it was taken in accordance with the specified dietary control.

The only new element introduced into this group was the dietary regimen indicated in this study.

Blood and urine samples were drawn on "non-fasting" levels, except in a limited number of cases for comparative study. It was felt that the margin of standard error could be minimized in view of the dietary controls.

The authors felt they wanted to attempt this non-fasting level study in the majority of cases to see what latitudes would be found. Blood and urine work in all future dietary studies should be done on fasting levels.

THE DIETARY REGIMEN

The details of the new dietary regimen were as follows:

1. All daily water intake was consumed upon arising, preferably at warm temperatures and about one hour before breakfast. (In extremely hot weather, additional water was allowed about one-half hour before the evening meal.)

2. Room temperature milk (whole) or warm soup (not creamed) were the only liquids permitted with meals. These two liquids were allowed at any time. Any solids were permitted at any time as long as they were not accompanied by the wrong liquids.

3. Cod liver oil, mixed either with two tablespoonfuls of fresh, strained orange juice or two tablespoonfuls of cool milk, was taken on a fasting stomach at least four but preferably five or more hours after the evening meal and before retiring, or one or more hours before breakfast upon arising and at least one-half hour after water intake. The oil was taken daily. However, where there were dietary complications or accompanying conditions like diabetes or heart disease, it was taken only twice a week to facilitate assimilation. It has been found that people with these conditions take to the regimen more easily this way. The cod liver oil-milk mixture, especially for advanced sensitive arthritics, is preferable to the orange juice mixture. The cod liver oil mixtures were prepared in this manner: Before ingestion they were shaken well in a two-ounce, screw-top jar.

4. Tablets, pills or supplements of any kind were allowed either with water upon arising, with milk or soup at mealtime, or with milk or soup at any time.

5. There was complete curtailment of soft drinks, candy, cake, ice cream or any food made up of white sugar.

6. Those who felt that the sacrifice of coffee was too great were allowed black coffee following the water intake, providing it was taken at least 15 minutes before breakfast. Preferably, for optimal results, coffee should be omitted from the diet.

Only rule three might be included in a blindfold study type of test. The others, as is readily apparent, would not be subject to this type of test.

For control purposes, it would be preferable that anyone taking part in a study of this kind should not be receiving any medications during the observation period. It is our experience that water taken ad lib with medications defeats the dietary regimen.

Diets recommended to the subjects ranged from 1,800 to 2,400 calories daily.

DIETARY AND PHYSICAL EVALUATION

A special interrogation chart was used. Its purpose was to elicit complete information about the patient. The complete background of all liquid intake, its temperature and the time of intake, was recorded in addition to noting what was had at each meal. The same routine was applied to every detail in the solid fraction of the meal. Complete objective data on the condition of the skin, scalp, hair, ears and nails were detailed into the charts from the physical examination.

Sedimentation rates, cholesterols, complete blood counts and urinalysis were done on all the patients. In addition, blood sugar levels were determined in one-third of the cases. When glycosuria was present, fasting blood sugars were done as well.

CLINICAL RESULTS

Ninety-two per cent of the patients responded to the dietary regimen within periods of two to 20 weeks with Grade I, II and III improved response. Subjectively, this consisted of marked reduction of pain and general improvement in well-being in the majority of patients. Objectively, there was diminished tissue swelling, improved range of

motion and mobility, less fatigue, better complexion, frontal (forehead) signs of luster, skin and scalp improvement, re-established levels of cerumen, stronger nails, and much more alertness. Blood chemistry and urinalysis improvements were consistent with the subjective and objective changes.

Twelve patients, negative for cerumen, did not secrete any supply in six months. Otosclerosis was not evaluated. Many with injection of the ears at the beginning lost the brightness of the color. Some ten patients did not respond to normal levels of natural scalp and hair sebaceous secretions (natural oils).

The results achieved at the end of the six months period were noteworthy enough, we believe, to warrant a statistical report at this time. Important subjective results were noted at the end of the first three months, but the study was continued for the additional three months to record blood chemistry and urine follow-up data.

LABORATORY OBSERVATIONS

Blood sedimentation rates dropped consistently from averages of 20 to 30 (Wintrobe) to normals of 0 to 12 within a period of eight to 18 weeks. Two cases were reduced to zero. Most were brought within the lower normal range.

It was observed repeatedly that whenever water was taken between meals and especially with meals, contrary to our prescribed regimen, the erythrocyte sedimentation rate became elevated within one to three weeks, all other diet factors being constant.

Sedimentation rates were erratic in 16 cases during outbreaks of Asian influenza in October and November, 1957, and when patients contracted ordinary colds. They had reverted to water or juices ad lib throughout the day. Once they went back on our precise and standardized dietary schedule, sedimentation rates fell steadily. This condition may be explained by increased tissue swelling (possible plasma leakage), which follows when water output is less than water intake.[2]

One sedimentation rate increased erratically following a traumatic injury. This phenomenon has been observed in the precipitation and agglutination of blood flowing through vessels in crushed tissues.[3]

Eight patients who would not sacrifice their morning coffee with breakfast resisted decrease of the sedimentation rate. Also, as soon as anyone gave in and took coffee or tea for a week or more, it was reflected in a mild temporary rise in the sedimentation rate, fluctuating from 2 to 6 or more mm. This quick response may not hold true in the average normal person, but it did in our arthritic study.

One other phenomenon was noted. Seven patients who followed the regimen adequately nevertheless showed great resistance to lowering of their sedimentation rates in a period of 16 to 20 weeks. This result was finally explained when it was noted that six of the seven cases had one thing in common—excessive intake of gelatin products on previous allergic diets. It is known that abnormal protein levels of gelatin, nucleic acid and hyaluronic acid may endanger the sedimentation rate.[4]

Leucocytosis gave way to normal white blood cell counts. There was also a general shift to the left in the differential with a return to normal in the eosinophil count, frequently from an absence of eosinophils at the beginning of the regimen.

Hemoglobin levels frequently went up. Increases of 0.4 to 1.6 grams above pre-study levels were noted when the hemoglobin level was originally below normal. The increases were generally observed within the first four months of the study. There were slight increases in the hematocrit.

Cholesterol levels dropped or could be controlled even with the introduction of milk, eggs, butter and cod liver oil. For many patients in the study these were new foods. On non-fasting blood levels, blood cholesterols decreased an average of 10-20 per cent in a definite pattern. This was true only as long as room temperature milk or warm soup (not creamed) were the only liquids taken at mealtime. The time necessary for these initial cholesterol changes was a little longer, some 12 to 18 weeks.

Patients with poor digestive function and others in the upper brackets of age, 70 to 85 years, had slower reductions of cholesterol levels on this regimen. But the pattern was the same—one of decreasing levels.

Three cases with a history of coronary occlusion complicated by arthritis were included in the study on a modified course. Cholesterol levels dropped 60-100 mg.% in four to five months.

Blood sugar levels turned to the lower side of normal. One patient was compelled to give up insulin. Three unknown diabetics had their elevated blood sugar levels return to high normals from ranges of 185-250 mg.%.

Twenty-two per cent of those in the study at the beginning had alkaline urines. All but two became acid by the close of the study.

Blood pressure levels were found to be lower within a range of 10-60 mm. Hg systolic and 10 to 20 mm. Hg diastolic after ten to 15 weeks.

Body weights varied generally between 1 to 5 lb. in either direction.

INTRAVASCULAR AGGLUTINATION

Intravascular agglutination with blood sludging is consistently found in arthritis.[5] Blood sludge is defined as the intravascular agglutination or clumping of red blood cells into masses, resulting from the deposit of a sticky material which forms a coating on the surface of the erythrocytes and causes them to adhere to each other.[1]

In comparing normal blood with sludged blood, we noted several distinct contrasts.

Normal blood presents this picture:

1. The circulating erythrocytes are not agglutinated.
2. The leucocytes do not have an affinity for the endothelial tissue lining of blood vessels.
3. The flow of blood is laminar.
4. Tendency to blood vessel sacculation with resulting plasma leakage and hemoconcentration is kept at a minimum.
5. Blood flow in 60-120 micron vessels is so accelerated that individual red blood cells cannot be seen.
6. No phagocytosis of uncoated, healthy red blood cells is seen in the liver.

In sludged blood, we observed that:

1. The erythrocytes are coated with some type of "protein precipitate" which leads to "basic masses." As the basic masses grow in size a bottleneck develops in the circulatory system. The arterioles and capillaries are known to be a potential, perpetual bottleneck in the blood vascular system. Their shape is conical rather than cylindrical.
2. Leucocytes adhere to the endothelial linings.
3. Any plugging at the arteriole junction forcibly reduces the rates at which oxygen and glucose can be delivered to the endothelium of most of the small vessels of the body. Oxygen-poor endothelium leads to plasma leakage which, in turn, plays a role in hemoconcentration, tissue swelling and a reduction in circulating blood volume.
4. Settling, sedimented agglutinated red blood cells can, under specific conditions, gradually concrete into a large thrombus.
5. Phagocytes act upon coated, sticky red blood cells. Excessive phagocytosis means a greater tendency toward anemia.
6. Any interference of blood flow between the arterial and venous systems because of sludging inaugurates intermittent, prolonged, shutting-off of the arterioles, capillaries and venules in selected tissues and organs.

Inferentially, then, it would seem that the effect of intravascular agglutination on articular tissue is an etiological factor in arthritis.

ROLE OF COD LIVER OIL

The empirical use of cod liver oil in the treatment of arthritis is traditional. It is widely recommended in many textbooks of medicine and therapeutics.

In 1849 de Jongh[6] listed 20 doctors who agreed that cod liver oil had superior value in the treatment of chronic arthritis. Pemberton[7] in 1920, reporting 400 cases in the Army, described improvement on cod liver oil therapy, provided the patients were kept away from "inferior-type" starches.

The therapeutic value of cod liver oil is now known to be due largely to its rich content of vitamin D. Recent medical texts[8-12] still refer to the reported benefits of cod liver oil and vitamin D in the treatment of arthritis.

The administration of cod liver oil on an empty stomach represents an original approach in anti-arthritic therapy.

For purposes of the study and in line with keeping the non-fasting blood chemistry at the lowest margin of standard error, each patient's diet was controlled by this limitation of choice of liquid with meals. For practical purposes, each member of our group was getting the same chylomicron delivery pattern from his meals, as well as the larger percentage or peripheral acceptance of cod liver oil chylomicrons on a fasting stomach.

What effect these cod liver oil chylomicrons have on the removal of sludge from the vascular system is still to be determined. It is possible that basic mass bottlenecks can be bombarded with a concentrated chain reaction of cod liver oil chylomicrons. Perhaps this is a "softening up" process.

DISCUSSION

The unequivocal reduction of sedimentation rates through choice of constant liquids at constant temperatures for periods of 20 weeks or

longer, taken with the meal while food is going through digestion and assimilation for four to five hours, is a new appproach to the sedimentation rate problem.

The allowance of only two liquids at all meals —milk or soup—means each arthritic has approximately the same rate of gastrointestinal activity, other factors being constant. Temperatures of solid foods in the presence of liquids at constant temperatures have far less chance of deviation during digestive processes.

Based on White's[13] work, the ratio of 70 per cent delivery of the dietary oils into the systemic circulation and 30 per cent into the portal circulation is the normal pattern. White's view is acceptable if *all liquids and temperatures are constant* during and immediately after the meal, and for five to six hours until all the dietary lipids have been assimilated.

But people with or without arthritis do not eat this way and the 70-30 per cent relationship is sharply disrupted to the point where arthritics cause most of their lipid intake to come through the portal circulation before joining the peripheral circulation.

The majority of our patients evidenced increased warmth in their extremities, less swelling, and more energy after four to five months. Possibly this improvement was the result of reduced intravascular agglutination.

When intravascular sludging and/or elevated erythrocyte sedimentation rate is reversed by better eating habits, circulation is improved. More oxygen is utilized, instead of being bottlenecked at the arterial-venous systems. Following the disappearance of the blood sludging, there is more effective assimilation of glucose by muscle tissue. This was manifested by gradual relief of fatigue among the patients in our study.

SUMMARY

1. The value of a special dietary regimen, restricting water intake and including administration of cod liver oil on a fasting stomach, was studied in a series of 98 arthritic or rheumatic patients.

2. In a period of six months, 92 (93 per cent) showed major clinical improvement and 89 (90 per cent) favorable changes in blood chemistry.

3. Blood sedimentation rates dropped consistently from averages of 20 to 30 (Wintrobe) to normals of 0 to 12 within a period of eight to 18 weeks.

4. Restriction of all water intake to a single portion taken one hour before breakfast is an integral part of the treatment.

5. The sedimentation rates were erratic in 16 cases during an outbreak of Asian influenza, also in cases of common cold, when the patients reverted to water and juices ad lib throughout the day.

6. Intravascular agglutination is constantly found in arthritis.

7. A comparison of the normal and arthritic patterns indicates that sludged blood resulting from positive intravascular agglutination may be an etiological factor in arthritis.

8. Cod liver oil taken on a fasting stomach reduces blood sludging and helps relieve the symptoms.

9. The objective and subjective findings suggest that adherence to the prescribed regimen on a long-term basis may result in sustained clinical improvement.

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(*Concl'd. on page* 295)

evade, but let me, the Physician, cleave to the clean truth; assume no knowledge I have not, and claim no skill I do not possess. Cleanse me from all credulities, all fatuous enthusiasms, all stubbornness, vanities, egotism, prejudices, and whatever else may clog the sound processes of my mind—those be dirt; make my personality as aseptic as my instruments. Give me heart, but let my feeling be such as shall cover over me as an investment of power, to make my thoughts clear and cold as stars, and my hand skillful, strong as steel. Deliver me from professionalism, so that I may be always human, and thus minister to sickly minds as well as to ailing bodies. Give me the joy of healing. I know how far short I am of being a good man, but make me a good doctor. Give me courage, but hold me back from overconfidence. Let me so discharge the duties of my office that I shall not be ashamed to look man or woman in the face, so that when at death I lay down my task I shall go to what judgement awaits me strong in the consciousness that I have done something towards alleviating the incurable tragedy of Life. Amen."

(*Arthritis Diet, from page* 270)

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STRAINING AT STOOL CAN BE FATAL

Vascular thrombosis leading to sudden death may result from excessive bathroom straining by constipated individuals. Certain of the changes caused by straining are of sufficient intensity and duration to bring on an automatic cycle of extreme variations in peripheral blood pressure and blood flow—known as the Valsalva maneuver. This phenomenon which occurs during straining when the pressure in the chest cavity is forcibly raised to a degree of at least 40 mm. of mercury and sustained for eight to 10 seconds. Under these conditions, there results in sequence a series of reflex circulatory changes including sharply rising and falling arterial and venous blood pressures.

A study which directly measure the changes in venous pressure and the arterial circulation in the extremities during actual bowel function of normal and constipated males and females showed that straining initiated marked elevations. These changes further increased with the severity of the straining.

The venous pressure increased dramatically during the strain period, as high as 40 to 50 millimeters over the resting period and abruptly dropped to the base level with the sudden release of the strain. This action "is capable of causing a suction action which is capable of detaching a bland thrombus and could cause sudden death if the blood clot became lodged in the lungs or heart. From 50 to 60 per cent of all normal adults of middle age or over harbor silent detachable clots (clots producing no symptoms) in the veins of their feet or calves."

A similar but opposite set of circulatory variations were observed in the arterial circulation during straining associated with bowel functioning, while the venous pressure increased, the blood flow in the peripheral arteries was reduced by approximately 95 per cent. This reduced blood flow was accompanied by a vaso-constriction which increased the peripheral resistance to blood flow. The toes were most often affected and showed an increase of 400 peripheral resistance units. The possibility exists that this phenomenon is an initiating factor of the commonly observed peripheral gangrene in the toes. A. Halpern, et al. *Am. J. Med. Sci.* v, 234, no. 4, 1959.